

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-290399

(43)Date of publication of application : 11.11.1997

(51)Int.Cl.

B26F 1/16
G02C 13/00
// B24B 9/14

(21)Application number : 08-107020

(71)Applicant : TOPCON CORP
IWAKURA TAKURO

(22)Date of filing : 26.04.1996

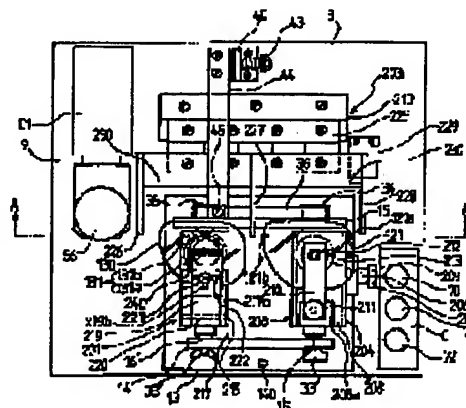
(72)Inventor : SUZUKI YASUO
IWAKURA TAKURO

(54) PARTS FITTING HOLE DRILLING DEVICE FOR RIMLESS LENS

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a rimless lens fastening hole drilling device that can drill parts fitting holes easily and rapidly in a peripheral edge part of a rimless lens of demonstration lens shape without requiring skill.

SOLUTION: This parts fitting hole drilling device for a rimless lens is provided with first and second lens holding means 200, 202 held on a base 3 in such a way that they can be interlocked with each other, a hole machining means 9 held on the base 3 in order to open a fitting hole for fitting peripheral edge part parts of a rimless lens 130 held to the second lens holding means 201, and a hole engaging element 45 engaged with a fitting hole 121a of a demonstration lens 121 held to the first lens holding means 200 in such a position that a drill 58 of the hole machining means 9 faces a specified position of a peripheral edge part of the rimless lens 130. A slider 205 for adjusting the positions of the rimless lens 130 and demonstration lens 121 is provided at the first lens holding means 200.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision]

of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

*** NOTICES ***

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The 1st lens maintenance means which makes the demonstration lens with which the attaching hole for component mounting was prepared in the periphery section hold. The 2nd lens maintenance means which makes the demonstration lens held by the lens maintenance means of the above 1st correspond, and makes the rim loess lens after a grinding process hold. The hole processing means held on the aforementioned base in order to make the attaching hole for the periphery section component mounting of the rim loess lens held at the lens maintenance means of the above 2nd. An engagement means by which the punching member of the aforementioned hole processing means engages with the aforementioned attaching hole in the position which faced the predetermined position of the periphery section of the aforementioned rim loess lens. It is attachment punching equipment for the component mounting of the rim loess lens equipped with the above, and is characterized by preparing the controller material for adjusting the position of the aforementioned rim loess lens and the aforementioned demonstration lens at least in one side of the above 1st and the 2nd lens maintenance means.

[Claim 2] Attachment punching equipment for the component mounting of the rim loess lens according to claim 1 characterized by preparing based on the criteria positioning member made to contact the KOBA end face of the aforementioned rim loess lens and a demonstration lens.

[Claim 3] The attachment punching equipment for the component mounting of the rim loess lens according to claim 1 or 2 carry out having prepared a slope-regulation means operation of the lens maintenance means of the above 1st adjusts the inclination of the aforementioned demonstration lens, and adjust the rim loess lens which the lens maintenance means of the above 2nd sometimes interlocked for the lens maintenance means of the above 1st, and was held at the lens maintenance means of the above 2nd to the same inclination as the aforementioned demonstration lens as the feature.

[Translation done.]

*** NOTICES ***

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the attachment punching equipment for the component mounting of the rim loess lens for making the attaching hole (hole for lens stops) for component mounting, such as a bridge and a temple (ear credit), in the periphery section of a rim loess lens.

[0002]

[Description of the Prior Art] Generally, with the rim loess glasses using the rim loess lens which consists of plastics etc., the rim loess lens of these right and left is combined on the bridge by arranging between the rim loess lenses of right and left of the bridge where the attached section (lens stop) was prepared in both ends at one, and fixing to the rim loess lens of right and left of the lens stop of the both ends of this bridge with a screw. moreover — these rim loess glasses — the bridge of each rim loess lens — the marginal part of an opposite side — temple attachment — public funds — an implement (lens stop) is fixed with a screw and it usually appears in this lens stop to have attached the temple (ear credit) through a ginglymus

[0003] the rim loess lens of the right and left by which grinding was carried out to this appearance by carrying out after carrying out the grinding process of the raw lens to the configuration of a demonstration lens with the lens edger and considering as a rim loess lens, when these rim loess glasses are manufactured — a bridge and temple attachment — public funds — the attaching hole for attaching parts, such as an implement, is made, respectively

[0004] And before making this attaching hole, the rim loess lens by which the grinding process was carried out to the flat demonstration lens with which the attaching hole was prepared was piled up, the nose of cam of a marker was inserted in the attaching hole of a demonstration lens, and the mark (mark) of the drilling position of an attaching hole is put on the rim loess lens. Then, the spectacles engineer who became skillful in the portion of the mark of this rim loess lens had made the attaching hole (hole for lens stops).

[0005]

[Problem(s) to be Solved by the Invention] By the way, when making this attaching hole in the predetermined position of the periphery section of a rim loess lens, since the refracting interface of a rim loess lens is curving, it needs to end right-angled to the tangential plane on the refracting interface of a rim loess lens on the relation of the part fixation with a screw.

[0006] However, it was very difficult to make a hole in the tangential plane on the refracting interface of a rim loess lens right-angled, and was that for which it cannot but depend on **. And when a hole was made in the direction of slant to a tangential plane, it was the present condition to adjust the parts and ginglymi which have a lens stop, such as a bridge and temple fixing metal, and to make it a rim loess lens not separate.

[0007] Moreover, the size of the rim loess lens which carried out the grinding process to the configuration of a demonstration lens may fluctuate somewhat according to a processing error. Furthermore, the grinding process of the rim loess lens may have been carried out to the configuration and analog of a demonstration lens by request of the wearing person of a rim loess frame. The distance from the size of the parts attached in a rim loess lens also by these cases

or the edge of a rim loess lens to the attaching hole for attachment does not change. Therefore, even when above, it is desirable that the attaching hole for component mounting can be made in a rim loess lens simply and quickly, and correctly.

[0008] Then, the purpose of this invention is about the attaching hole for component mounting to provide the periphery section of the rim loess lens of a demonstration lens configuration with the attachment punching equipment simple and for the component mounting of the rim loess lens which can be opened correctly quickly, without requiring skill, whether a processing error is in the size of a rim loess lens or is the case where the grinding process of the rim loess lens is carried out to the configuration and analog of a demonstration lens.

[0009]

[Means for Solving the Problem] In order to attain this purpose, invention of a claim 1 The 1st lens maintenance means which makes the demonstration lens with which the attaching hole for component mounting was prepared in the periphery section hold, The 2nd lens maintenance means which makes the demonstration lens held by the lens maintenance means of the above 1st correspond, and makes the rim loess lens after a grinding process hold, The hole processing means held on the aforementioned base in order to make the attaching hole for the periphery section component mounting of the rim loess lens held at the lens maintenance means of the above 2nd, In the attachment punching equipment for the component mounting of a rim loess lens equipped with an engagement means by which the punching member of the aforementioned hole processing means engages with the aforementioned attaching hole in the position which faced the predetermined position of the periphery section of the aforementioned rim loess lens It is characterized by considering as the attachment punching equipment for the component mounting of the rim loess lens which prepared the controller material for adjusting the position of the aforementioned rim loess lens and the aforementioned demonstration lens at least in one side of the above 1st and the 2nd lens maintenance means.

[0010] Moreover, invention of a claim 2 is characterized by preparing the criteria positioning member made to contact the KOBA end face of the aforementioned rim loess lens and a demonstration lens in the aforementioned base.

[0011] Furthermore, invention of a claim 3 carries out having prepared a slope-regulation means adjusts the inclination of the aforementioned demonstration lens by operation of the lens maintenance means of the above 1st, and adjust the rim loess lens which the lens maintenance means of the above 2nd was sometimes interlocked for the lens maintenance means of the above 1st, and was held at the lens maintenance means of the above 2nd to the same inclination as the aforementioned demonstration lens as the feature.

[0012]

[Embodiments of the Invention] Next, the gestalt of implementation of this invention is explained based on a drawing.

[0013] The attachment punching equipment for the component mounting of the rim loess lens concerning this invention improves what was shown in drawing 1 - drawing 10, i.e., the thing of JP,6-307300,A for which these people applied previously. You may apply it also to the equipment shown in this drawing 1 - drawing 10 while the fundamental composition of the attachment punching equipment for the component mounting of the rim loess lens concerning this invention is the same as that of what was shown in drawing 1 - drawing 10. Therefore, the attachment punching equipment for the component mounting of the rim loess lens first shown in drawing 1 - drawing 10 is explained.

[0014] [1] The fundamental attachment punching equipment for the component mounting of a rim loess lens which will be the requisite for the fundamental composition of equipment and invention of ***** is equipped with the mark attachment equipment 2 indicated to be the main part 1 of punching equipment shown in drawing 1 - drawing 6 to drawing 7 - drawing 10.

[0015] <Main part 1 of punching equipment> this main part 1 of punching equipment The base plate 3 as a base member shown in drawing 1 - drawing 3 (base), X-Y table 4 as a move means with which it was equipped like drawing 3 on the base plate 3, The demonstration lens maintenance means 5 and the lens maintenance means 6 with which it equipped on X-Y table 4, A maintenance means linkage means 7 to carry out synchronous linkage of this demonstration

lens maintenance means 5 and the lens maintenance means 6, the hole position detection means 8 which was made to approach X-Y table 4 and was arranged on the base plate 3, and the hole processing means 9, It has the control box C which was located in the method of right-hand side of X-Y table 3 in drawing 1 , and was formed on the base plate 3.

[0016] (X-Y table 4) X-Y table (movable table) 4 The guide rails 10 and 10 fixed towards right and left among drawing on the base plate 3 as shown in drawing 3 and drawing 4 , The X table 11 with which guide rails 10 and 10 were equipped possible [attitude movement right and left (the direction of X)], It has the guide rails 12 and 12 fixed towards the vertical—among drawing direction (the direction of Y), i.e., a cross direction, on the X table 11, a guide rail 12, and the Y table 13 with which it was equipped possible [attitude movement] towards the vertical direction (the direction of Y) on 12.

[0017] On this Y table 13, drawing 1 and the retaining walls 14 and 15 prolonged in right and left (the direction of X) among drawing 4 are being fixed. These retaining walls 14 and 15 set an interval in the direction (cross direction) of Y, and are arranged in it in parallel. This retaining wall 14, the demonstration lens maintenance means (1st lens maintenance means) 5 mentioned above among 15, and the lens maintenance means (2nd lens maintenance means) 6 are held.

[0018] (Demonstration lens maintenance means 5) This demonstration lens maintenance means 5 (1st lens maintenance means) The operation shaft 16 held penetrate retaining walls 14 and 15 and free [the rotation to retaining walls 14 and 15], The pillar object 17 which the operation shaft 16 penetrated the center of a peripheral surface, and was held in the center of this operation shaft 16, It has the positioning flange 21 prepared in the free edge of the pads 18 and 19 (elastic friction attachment component) which consist of rubber, synthetic resin, etc. fixed to the ends side of this pillar object 17, the support shaft 20 fixed in the center of a peripheral surface of the pillar object 17 by intersecting perpendicularly with the operation shaft 16, and the support shaft 20. The positioning lines 18a and 19a as shown in drawing 6 (b) are given to the front face of these pads 18 and 19.

[0019] Moreover, the demonstration lens maintenance means 5 has the supporter material 22 of the shape of a KO character held at the end section side of the operation shaft 16. This supporter material 22 has the pieces 22a and 22b of opposite prolonged towards the pillar object 17 side in parallel with the operation shaft 16.

[0020] Furthermore, the support arms 23 and 24 in which the demonstration lens maintenance means 5 was arranged in parallel in accordance with the operation shaft 16, The fixed screws 25 and 26 which penetrate the end section of the support arms 23 and 24, are screwed on the pieces 22a and 22b of opposite, and are fixing the support arms 23 and 24 to the pieces 22a and 22b of opposite, The clamp screws 27 and 28 screwed on the other end of the support arms 23 and 24 towards the operation shaft 16, It has the disks 29 and 30 held at the point of the clamp screws 27 and 28, and the pads 31 and 32 (elastic friction attachment component) which consisted of rubber, synthetic resin, etc. and fixed to the end face of disks 29 and 30.

[0021] In addition, 33 is the operation knob for slope regulation operation fixed to the end section of the operation shaft 16.

[0022] (Lens maintenance means 6) Since this lens maintenance means 6 (2nd lens maintenance means) also has composition the same as the demonstration lens maintenance means 5, the sign which gave "" to the sign used for the demonstration lens maintenance means 5 is given to the same member as this demonstration lens maintenance means 5, or a similar member, and the explanation is omitted.

[0023] (Maintenance means linkage means 7) This maintenance means linkage means 7 consists of timing belts 36 over which the operation shaft 16, the timing gears 34 and 35 fixed to the other end of 16', and timing gears 34 and 35 were built.

[0024] This maintenance means linkage means 7, the operation shaft 16, 16', and the operation knob 33 grade constitute the slope regulation means for making the inclination of the demonstration lens held at the demonstration demonstration lens maintenance means 5, and the rim loess lens held at the lens maintenance means 6 adjust similarly. In addition, you may also include the lens maintenance meanses 5 and 6 in this slope regulation means.

[0025] (Hole position detection means 8) This hole position detection means 8 has the support

plate 40 by which erection fixation was carried out on the base plate 3, as shown in drawing 1 and drawing 2. The flat-surface configuration is formed in the shape of L character from wall 40b to which this support plate 40 extends in wall 40a prolonged up and down among drawing 1, and right and left. and the point of the support bolt 41 as a rotation support shaft was screwed on wall 40a, and it was shown in the support bolt 41 at drawing 2 — as — a side configuration — support of an abbreviation rectangle — the piece 42 is held possible [rotation]

[0026] this support — inclined plane 42a to which the margo inferior is caudad located in a piece 42 from the axis O of the support bolt 41 is formed in the superior-horn section by the side of wall 40a thereby — the state of drawing 2 — support — end-face 42b of a piece 42 — wall 40a — contacting — support — although a piece 42 cannot rotate counterclockwise, it can rotate in the direction of a clockwise rotation

[0027] moreover, this support — between the piece 42 and the support bolt 41, the torsion spring 43 wound around the support bolt 41 is infixed this torsion spring 43 — support — a piece 42 — the direction of the counterclockwise rotation in drawing 2 — rotation energization — carrying out — support — the end face of a piece 42 is made to contact wall 40a

[0028] this support — the support plate 44 prolonged in the direction of Y towards the upper part of X-Y table 4 is fixed to the upper surface of a piece 42, and the taper-like hole engagement child (engagement means) 45 is being fixed to the free edge inferior surface of tongue of a support plate 44

[0029] (Hole processing means 9) This hole processing means 9 has the frame board 50 of the couple fixed on the base plate 3, and 50', as shown in drawing 1. The side configuration is formed in inverse L-shaped from horizontal-level 50b to which this frame board 50 and 50' extend in the direction of Y in an X-Y table 4 side from the upper limit of perpendicular section 50a and perpendicular section 50a.

[0030] Between the points of these horizontal levels 50b and 50b, the guide plate 51 prolonged up and down is fixed, the slots 51a and 51a of the couple which sets an interval up and down and is prolonged up and down are formed in this guide plate 51, and the rise-and-fall plates 52 and 53 are arranged in both-sides side of this guide plate 51. the bolts 54 and 54 with which these rise-and-fall plates 52 and 53 penetrated the rise-and-fall plate 53 and Slots 51a and 51a, and the point was screwed on the rise-and-fall plate 52 — it is — mutual — one — and along with the guide plate 51, it is combined possible [rise and fall]

[0031] The L character-like susceptor 55 is fixed to the rise-and-fall plate 52, the motor 56 for a drill drive is fixed on a susceptor 55, the drill chuck 57 for drill maintenance is held at the soffit section of rotation output-shaft 56a (main shaft) of a motor 56, and the drill 58 is held removable as a punching member at this drill chuck 57. In addition, Salients 53a and 53a protrude in the center of a tooth back of the rise-and-fall plate 53, and the engagement pin 59 is held between this salient 53a and 53a.

[0032] The frame board 50 is located in the up superficies of perpendicular section 50a, and the driving gear 60 is being fixed to it on screws 61 and 61. the gear reduction gear interlocked with the motor which does not illustrate this driving gear 60, and this motor — having — output-shaft 60a of this gear reduction gear — the frame board 50 — penetrating — the frame board 50 and 50' — it is arranged in between

[0033] The disc-like cam 62 is formed in this output-shaft 60a at one at the same axle, notch 62a for position detection is formed in the peripheral surface of a cam 62, the inside of the frame board 50 is approached at a cam 62, and the microswitch 63 is being fixed. This microswitch 63 has actuator lever 63a, and engagement roller 63b prepared in the point of this actuator lever 63a is made to **** it to the peripheral surface of a cam 62.

[0034] Both-ends maintenance of the frame board 50 and the support shaft 64 which located the upper part in 50' is carried out, and the pars intermedia of the drive lever 65 of a tabular is held free [rotation] at this support shaft 64. Engagement notch 65a of the shape of a slit opened at a nose of cam is formed in the end section of this drive lever 65, and the engagement pin 59 is made to engage with this engagement notch 65a.

[0035] Moreover, the link board 66 upper-limit section is held free [rotation] through a pivot 67 at the other end of the drive lever 65, and the pivot 68 attached in the position (periphery

section) as for which the side of the cam board 62 carried out eccentricity is held free [rotation] at the soffit section of this link board 66. In addition, while roller 63b of a microswitch 63 is engaging with notch 62a of a cam 62, the rise-and-fall plates 52 and 53 and the drill 58 which goes up and down to one are located by the top dead center.

[0036] ((C) Control box) The electric power switch 70, the inversion switch 71, and the start switch 72 are formed in this control box C.

[0037] If this electric power switch 70 is made to turn on, the control circuit which is not illustrated will be operated. In this state, if this control circuit makes the start switch 72 turn on, while it will operate a motor 56, will carry out the rotation drive of the rotation output-shaft 56a and will rotate a drill 58, it operates a driving gear 60 and right-rotates output-shaft 60a. By making a cam 62 make one revolution, and carrying out a variation rate caudad with this rotation, after the link board 66 makes the upper part carry out the variation rate of the right end section of the drive lever 65 among drawing 2, after the left end section of the drive lever 65 is dropped, it is raised. Under the present circumstances, it is raised after the rise-and-fall plates 52 and 53 are dropped by a motor 56 and a drill 58, and one by the drive lever 65.

[0038] And if engagement roller 63b of a microswitch 63 is made to engage with notch 62a of a cam 62 at the same time a drill 58 is made to carry out a variation rate to a top dead center, a microswitch 63 will detect this position (initial valve position), and will output a detection signal. This detection signal is inputted into a control circuit, and a control circuit will stop the operation of a motor 56 and a driving gear 60, if this detection signal is received.

[0039] Moreover, if the inversion switch 71 makes a control circuit turn on, after it will stop the operation of a driving gear 60 while this drill 58 being dropped, it carries out the inversion operation of the driving gear 60, makes output-shaft 60a rotate reversely, raises the rise-and-fall plates 52 and 53, a motor 56, and a drill 58 to a top dead center (initial valve position), and stops the operation of a motor 56 and a driving gear 60.

[0040] <Mark attachment equipment 2> This mark attachment equipment 2 has support sense doubling equipment 110 of the lens with an adhesive disk by which grinding was carried out to the means for supporting 80 which support a demonstration lens, and the marker maintenance means 100.

[0041] Means for supporting 80 have the supporter 83 of the guide plate 82 fixed to L character-like the support plate 81 and this support plate 81, and the couple with which transverse-plane 82a of a guide plate 82 was equipped.

[0042] This supporter 83 has plinth 83a, the pad tie-down plate 84, and a support plate 85, and this plinth 83a, the pad tie-down plate 84, and the support plate 85 are being fixed to transverse-plane 82a of a guide plate 82 with the bolt 86 in this order. the pad which this plinth 83a is prepared lower than the upper surface of a guide plate 82, and becomes the upper-limit section transverse plane of the pad tie-down plate 84 from rubber, synthetic resin, etc. — the member 87 has fixed

[0043] moreover, a support plate 85 is made to project at the front of a guide plate 82 horizontally — having — **** — this support plate 85 — L character-like maintenance — a piece 88 is held possible [movement to a longitudinal direction], and the spring carrier pin 89 fixes to the base inferior surface of tongue of a support plate 85 — having — maintenance — the coil spring (energization means) 90 is infixed between spring engagement section 88a of a piece 88, and the spring carrier pin 89 91 counters a pad 87 — making — maintenance — the pad member which consists of rubber, synthetic resin, etc. which fixed to perpendicular section 88b of a piece 88, and 92 are the scales formed in the upper surface of a support plate 85

[0044] the slide with which engagement slot 101a which makes the marker maintenance means 100 engage with a guide plate 82 was prepared — a member 101 and a slide — it has the supporter material 103 of the shape of L character held possible [vertical movement] at the guide plate 102 fixed to the member 101, and the guide plate 102

[0045] this supporter material 103 — the clamp screw 104 — minding — spring attachment — a member 105 holds possible [level rotation] — having — this spring attachment — to the member 105, the end face section of the flat spring 106,107 of a couple has fixed Marker attaching part 106a by which the shape of V character was bent is formed in the point of this

flat spring 106, and the marker 108 is held removable between flat springs 106,107 by pushing against marker attaching part 106a the marker 108 made to engage with this marker attaching part 106a by the flat spring 107.

[0046] the slide with which engagement slot 111a which makes support sense doubling equipment 110 engage with a guide plate 82 was prepared — a member 111 and this slide — the direction which penetrates a member 111 and intersects perpendicularly with engagement slot 111a — a slide — possible — a slide — it has the engagement board 112 held at the member 111 And engagement presser-foot-stitch-tongue 112a which turned to the point of this engagement board 112 caudad, and was bent perpendicularly is prepared.

[0047] In addition, the Y table 13 is equipped with the fixed screw 140 which fixes this Y table 13 to the X table 11.

[0048] Next, an operation of the attachment punching equipment for the component mounting of the rim loess lens of such composition is explained.

[0049] (1) In the glasses 120 for a demonstration as shown in marking drawing 7 of position decision, a bridge 122 is arranged between the demonstration lenses 121,121 of a lens configuration, and the lens stops 122a and 122a formed in the both ends of this bridge 122 are being fixed to the opposite marginal part of the demonstration lens 121,121 on the screw 123,123. moreover, the bridge 122 of the marginal part of the demonstration lens 121 — the portion of an opposite side — temple attachment — public funds — an implement (lens stop) 124 is fixed on a screw 125 — having — temple attachment — public funds — the temple (ear credit) 126 is attached in the implement 124 through the ginglymus 127 In addition, the demonstration lens 121 is curving in the direction of three dimensions in the lens configuration.

[0050] by the way, maintenance — the spring force of a coil spring 90 is resisted and a piece 88 is moved to the nose-of-cam side of a support plate 85 — making — a pad — the maintenance after extending the interval of members 87 and 91 and laying the demonstration lens 121,121 of right and left of the glasses 120 for a demonstration on the support plate 85 of the couple of means for supporting 80 — a piece 88 — detaching — a pad — the demonstration lens 121 is made to pinch between a member 87 and 91

[0051] next, a slide — while making engagement slot 101a of a member 101 engage with a guide plate 82 — the clamp screw 104 — loosening — spring attachment — carrying out level rotation of the member 105 — the point of a marker 108 — the center of screws 123 or 125 — doubling — the clamp screw 104 — binding tight — spring attachment — a member 105 is fixed

[0052] in this state, the upper surface of the demonstration lens 121 is contacted in the nose of cam of a marker 108 — making — a slide — the positioning line L is drawn on the demonstration lens 121,121 on either side by moving a member 101 along with a guide plate 82 It keeps fixed, without loosening the clamp screw 104 of the marker maintenance means 100, after finishing drawing this positioning line L on the demonstration lens 121,121 on either side.

[0053] On the other hand, the grinding of the periphery section of a ground lens (lens plate) is carried out to the configuration of the demonstration lens 121 of the glasses 120 for a demonstration with the lens edger (lens grinding attachment) which is not illustrated, and it considers as the rim loess lens 130 as shown in drawing 10 . The adhesive disk 131 for making the rim loess lens 130 hold to the lens axis of rotation of a lens edger on the occasion of grinding adsorbs, this lens 130, i.e., rim loess lens, by which grinding was carried out.

[0054] Cup-like object 131b set to circular metal base 131a from rubber, synthetic resin, etc. was prepared in one, and the axial center is made in agreement by this adhesive disk 131 focusing on the optics of the rim loess lens 130. Moreover, in case an adhesive disk 131 is made to hold to the lens axis of rotation of a lens edger, positioning slot 131c for carrying out positioning maintenance to this lens axis of rotation is formed in metal base 131a of this adhesive disk 131.

[0055] such the lens 130 with an adhesive disk, i.e., a rim loess lens, — the support-plate 85 top of the couple of means for supporting 80 — laying — a pad — the demonstration lens 121 is made to pinch between a member 87 and 91

[0056] Next, the installation state over the support plate 82 of the rim loess lens 130 is adjusted using support sense doubling equipment 110. namely, a slide — while making engagement slot

111a of a member 111 engage with a guide plate 82, it is made to engage with positioning slot 131c which prepared engagement presser-foot-stitch-tongue 112a prepared in the engagement board 112 in metal base 131a of an adhesive disk 131, and positioning slot 131c and a guide plate 82 are made parallel

[0057] then, the slide of the marker [having fixed the clamp screw 104] maintenance means 100 — engagement slot 101a of a member 101 is made to engage with a guide plate 82

[0058] in this state, the upper surface of the rim loess lens 130 is contacted in the nose of cam of a marker 108 — making — a slide — the straight line for alignment is drawn on the rim loess lens 130 by moving a member 101 along with a guide plate 82 This work is done about a rim loess lens on either side.

[0059] (2) Make the right-hand side demonstration lens 121 contact a pad 18, and while doubling the positioning line L given to the demonstration lens 121 with positioning line 18a given to this pad 18, make the demonstration lens 121 contact the positioning flange 21, where it loosened the attaching hole processing (demonstration lens maintenance) clamp screw 27 and the interval between a pad 18 and 29 is extended greatly. In this state, the fixed screw 25 is bolted, the clamp screw 27 is bolted, and pinching fixation of the right-hand side demonstration lens 121 is carried out between a pad 18 and 29.

[0060] In addition, on the occasion of alignment with this demonstration lens 121 and pad 18, the fixed screw 25 can be operated, rotation operation of the support arm 23 can be carried out, and a pad 29 can also be shifted from a pad 18 to the side. Moreover, among drawing, although sense differed, the left-hand side thing and the right-hand side thing added (L) to the left-hand side demonstration lens 121, added (R) and explained the demonstration lens 121 to the right-hand side demonstration lens 121 while it attached the sign of explanation same for convenience.

[0061] The left-hand side demonstration lens 121 is made similarly to pinch between a pad 19 and 30. in addition, pinching of this demonstration lens 121 — facing — the bridge 122 of the glasses 120 for a demonstration, and temple attachment — public funds — an implement 124 shall be beforehand removed from the demonstration lens 121,121

[0062] (Lens maintenance) the rim loess lens 130,130 of the left where the grinding process of the periphery section was carried out on the other hand, and the right to the adhesive disk 131 — removing — the rim loess lens 130,130 of this left and the right — pad 18' of the lens maintenance means 6, and 29' — between and 19', and 30' — it is made to hold in between In addition, among drawing, although sense differed, the left-hand side thing and the right-hand side thing added (L) to the left-hand side lens 130, added (R) and explained the rim loess lens 130 to the right-hand side lens 130 while it attached the sign of explanation same for convenience.

[0063] (Punching processing) next, the attaching hole which has held retaining walls 14 or 15 by the hand of another side, carried out move operation of the demonstration lens maintenance means 5 and the lens maintenance means 6 in one all around, and was prepared in the demonstration lens 121 while resisting the spring force of the torsion spring 43 in a support plate 44 by one of the two's hand and making the upper part carry out a variation rate — the hole engagement child 45 of the point of a support plate 44 — caudad — doubling . Movement of the demonstration lens maintenance means 5 in this case and the lens maintenance means 6 is performed by operation of X-Y table 4.

[0064] And release one's hold of a support plate 44, and the hole engagement child 45 is made to engage with attaching hole 121a of the demonstration lens 121 according to the spring force of the torsion spring 43. Furthermore, by carrying out rotation operation of the operation knob 33 for slope regulation, and carrying out rotation operation of the operation shaft 16, holding retaining walls 14 or 15 and carrying out jogging operation of the demonstration lens maintenance means 5 and the lens maintenance means 6 in one all around The hole engagement child's 45 taper side is made to engage with the marginal part of the attaching hole of the demonstration lens 121 over a perimeter.

[0065] Rotation operation of this operation shaft 16 is transmitted to operation shaft 16' through the maintenance means linkage means 7, i.e., timing gears 34 and 35 and a timing belt 36, and the periphery section of the rim loess lens 130 held at the lens maintenance means 6 of operation shaft 16' is made to interlock and tilt it to tilting operation of the periphery section of the

demonstration lens 121. In this case, the inclination state of the periphery section of the rim loess lens 130 and the periphery section of the demonstration lens 121 will be in the same state.

[0066] While the tangential plane which passes along the point that the front face of this demonstration lens 121 and the center line of attaching hole 121a cross by this state while the center line of attaching hole 121a of the demonstration lens 121 and the hole engagement child's 45 axis are in agreement becomes an abbreviation horizontal, the hole engagement child's 45 axis is made to intersect perpendicularly to this tangential plane.

[0067] If an electric power switch 70 is made to turn on, a control circuit (not shown) will operate in this position. In this state, if a control circuit makes the start switch 72 turn on, while it will operate a motor 56, will carry out the rotation drive of the rotation output-shaft 56a and will rotate a drill 58, it operates a driving gear 60 and right-rotates output-shaft 60a.

[0068] When a cam 62 is rotated and the link board 66 makes the upper part carry out the variation rate of the right end section of the drive lever 65 among drawing 2 with this rotation, the left end section of the drive lever 65 is dropped. Under the present circumstances, the rise-and-fall plates 52 and 53 are dropped by a motor 56 and a drill 58, and one by the drive lever 65, and a drill 58 drills an attaching hole in the periphery section of the rim loess lens 130.

[0069] The drilling position to the rim loess lens 130 of this attaching hole turns into a position corresponding to the position of an attaching hole established in the demonstration lens 121 of the same configuration as this rim loess lens 130. And the axis of this drill 58 becomes perpendicular to the tangential plane which passes along the point that the nose of cam of a drill 58 touches the outside surface of the rim loess lens 130. In addition, this tangential plane serves as an abbreviation horizontal.

[0070] And a cam 62 is rotated further, and among drawing 2, if the link board 66 carries out the variation rate of the right end section of the drive lever 65 caudad, the left end section of the drive lever 65 will be raised. Under the present circumstances, the rise-and-fall plates 52 and 53 are raised by a motor 56 and a drill 58, and one by the drive lever 65, and it is raised after a drill 58 deserts the rim loess lens 130. If engagement roller 63b of a microswitch 63 is made to engage with notch 62a of a cam 62 at the same time a drill 58 is made to carry out a variation rate to a top dead center with this elevation, a microswitch 63 will detect this position (initial valve position), and will output a detection signal. This detection signal is inputted into a control circuit, and a control circuit will stop the operation of a motor 56 and a driving gear 60, if this detection signal is received.

[0071] Moreover, when he has noticed alignment being imperfect immediately after making the start switch 72 mentioned above turn on, the inversion switch 71 is made to turn on. Thereby, after it stops the operation of a driving gear 60 while this drill 58 being dropped to the control circuit, it carries out the inversion operation of the driving gear 60, makes output-shaft 60a rotate reversely, raises the rise-and-fall plates 52 and 53, a motor 56, and a drill 58 to a top dead center (initial valve position), and stops the operation of a motor 56 and a driving gear 60.

[0072] [2] Give the same sign to the same portion as the composition of each part of equipment of which composition operation <composition> *** of this invention equipment was done, and omit the explanation.

[0073] While the equipment in this example has different composition from the demonstration lens maintenance means 5 of equipment and the lens maintenance means 6 which the composition of the demonstration lens maintenance means (1st lens maintenance means) 200 and the lens maintenance means (2nd lens maintenance means) 201 mentioned above, the positioning means (criteria positioning means) 203 of a RENZUKOBA end face is added.

[0074] (Demonstration lens maintenance means 200) This demonstration lens maintenance means 200 The standing ways 204 of the shape of a rectangular parallelepiped which was prolonged in accordance with the operation shaft 16 and this operation shaft 16, and was held at the operation shaft 16 as shown in drawing 13 and drawing 15, The slider 205 of the tabular as controller material prepared possible [attitude movement to a longitudinal direction] on these standing ways 204 (slide plate), It is screwed on a slider 205 by the arm 206 of the shape of L character prepared in one, and the arm 206 at an attitude operational, and has the stretching

screw 207 held free [rotation] at standing ways 204. In addition, as for a slider 205, it is desirable that it can be made to carry out move adjustment also in the direction in which the operation shaft 16 is prolonged. In this case, it replaces with a slider 205 and the X-Y table of mini size is prepared in standing ways 204.

[0075] Moreover, the plate 208 with which the demonstration lens maintenance means 200 was fixed to the slider 205, Block 208a of the shape of the square pole fixed on the end section of a plate 208, The elastic lens receiving part material 209 made of rubber prepared on the other end of a slider 205 (pad), The lens pressure plate 210 arranged on block 208a, and the fixed screw 211 which fixes the lens pressure plate 210 to the upper limit of block 208a, The lens presser-foot screw 212 screwed on the other end of the lens pressure plate 210 possible

[forward/backward moving] to the elastic lens receiving part material 209, It has the elastic lens pushing part material 214 made of rubber prepared in the inferior surface of tongue of the flange 213 prepared at the nose of cam of the lens presser-foot screw 212 at one, and a flange 213 at one. In addition, two or more parallel 209a is given to the upper surface of the elastic lens receiving part material 209 for the position decision of a demonstration lens (dummy lens).

[0076] In addition, when it replaces with a slider 205 and the X-Y table of mini size is prepared in the operation shaft 16, block 208a and lens pressure-plate 210 grade are prepared on this X-Y table.

[0077] (Lens maintenance means 201) The lens maintenance means 201 has the standing ways 215 of the shape of a rectangular parallelepiped which was prolonged along with operation shaft 16' and this operation shaft 16', and was held at operation shaft 16', the plate 216 fixed on these standing ways 215, and the bracket 217 fixed to the end section of a plate 216, as shown in drawing 12 and drawing 15 . This bracket 217 has bottom plate 217b to which the side configuration is forming successively the soffits of the L character-like side plates 217a and 217a and side plates 217a and 217a, and successive formation board 217c which is forming successively the point side soffits of side plates 217a and 217a.

[0078] Moreover, the lens maintenance means 201 has the support shaft 220 which is supporting the back end section of the elastic lens receiving part material 218 made of rubber (pad) fixed on the other end of a plate 216, the lens pressure plate 219 arranged on successive formation board 217c, and the lens pressure plate 219 free [rotation] to side plates 217a and 217a.

Engagement edge (engagement section) 219a of the shape of knife edge which projects caudad is formed in the point of this lens pressure plate (engagement means) 219, and slot 219b prolonged forward and backward is formed in the pars intermedia of this lens pressure plate 219. Furthermore, the lens maintenance means 201 has the locating plate 240 fixed to the fixed screw 221 which penetrates successive formation board 217c and slot 219b, and projects up, the fixed nut 222 screwed on the fixed screw 221, and the point side of the lens pressure plate 219.

[0079] In addition, the adjustment mechanism by an above-mentioned slider 205 and an above-mentioned stretching screw 207 is also applicable between the standing ways 215 of the lens maintenance means 201, and a plate 216. That is, a plate 216 can be formed in the longitudinal direction in drawing possible [a slide] to standing ways 215 like a slider 205, and it can consider as a slider, and can also consider as the composition which formed this slider in right and left possible [move adjustment] with the stretching screw like the slider 205. Although what is necessary is just to prepare such an adjustment mechanism in either of the lens maintenance meanses 200,201, you may prepare it in both. Moreover, it is also applicable to the equipment which showed such an adjustment mechanism to above-mentioned drawing 1 .

[0080] (Positioning means 203) This positioning means 203 The bracket 223 which was located between the retaining wall 15 and the support plate 40, and was fixed to the base plate 3 (supporter material), The plate 224 arranged between the bracket 223 and the retaining wall 15, The hinge 225 which has attached the plate 224 on the bracket 223, At equal intervals on a plate 224 at right and left And the locating plate 226,227,228 as a criteria positioning member each other attached in parallel (positioning means), It has the locating plate 230 which was prolonged in the stopper 229 which was located in the flank lower part of a hinge 225, and was fixed on the base plate 3, and right and left (as right-angled as locating plates 226-228), and was prepared in the plate 224 at one. A plate 224 contacts and this stopper 229 makes this plate 224 hold

horizontally, when rotating a plate 224 with a hinge 225 to a retaining-wall 15 side. In addition, it is also applicable to the equipment which showed such a positioning means 203 to drawing 1.

[0081] Moreover, in drawing 11, the mechanism in which you make it go up and down the motor 56 shown in drawing 1 is covered by covering C1, and is omitting the detailed illustration.

[0082] <An operation>, next an operation of the equipment of such composition are explained.

[0083] First, it carries out like drawing 7 and the positioning line L is formed in the demonstration lens 121. The elastic lens receiving part material 209 is made visible from the upper part by loosening the fixed screw 211 and on the other hand, rotating the lens pressure plate 210 centering on the fixed screw 211 like drawing 13.

[0084] And after laying the demonstration lens 121 on the elastic lens receiving part material 209 so that the positioning line L may be united with positioning line 209a, the lens pressure plate 210 is returned to the original state, and the fixed screw 211 is bolted. Next, the demonstration lens 121 is bound tight (pinching) and it is made to fix by bolting the lens presser-foot screw 212 between the elastic lens pushing part material 214 and the elastic lens receiving part material 209.

[0085] Moreover, the rim loess lens 130 with which it was equipped with the adsorption fixture 131 after a grinding process is prepared. On the other hand, where the fixed nut 222 is loosened, the point of the lens pressure plate 219 is rotated up centering on the support shaft 220, the rim loess lens 130 is laid on the elastic lens receiving part material 218, and engagement edge 219a of the lens pressure plate 219 is made to engage with positioning slot 131c prepared in the adsorption fixture 131 of the rim loess lens 130. Under the present circumstances, a locating plate 222 is made to contact the side of metal base 131a of an adhesive disk 131, and the center of an adhesive disk 131 is made in agreement with the center of the elastic lens receiving part material 218.

[0086] Next, by binding the fixed nut 222 tight, the rim loess lens 130 is bound tight through an adhesive disk 131 between engagement edge 219a and the elastic lens receiving part material 218, and it fixes.

[0087] Thus, after setting the demonstration lens 121 and the rim loess lens 130, this plate 224 is made to hold horizontally by rotating a plate 224 with a hinge 225 to a retaining-wall 15 side, and making a plate 224 contact a stopper 229.

[0088] And in making an attaching hole in the right end section of the rim loess lens 130, by operating X-Y table 4, making the right end of the KOBA side of the rim loess lens 130 contact a locating plate 227 like drawing 15, operating a stretching screw 207 next, and making a slider 205 move horizontally, the right end of the KOBA side of the demonstration lens 121 is made to contact a locating plate 228, and it makes the interval between the right ends of a lens 121,131 regularity (set point). On the other hand, in making an attaching hole in the left end section of the rim loess lens 130, by operating X-Y table 4, making the left end of the KOBA side of the rim loess lens 130 contact the locating plate 226 of drawing 15, operating a stretching screw 207 next, and making a slider 205 move horizontally, the left end of the KOBA side of the demonstration lens 121 is made to contact a locating plate 227, and it makes the interval between the left ends of a lens 121,131 regularity (set point).

[0089] next, in making an attaching hole in the right end section of the rim loess lens 130 Operate X-Y table 4 and attaching hole 121a of the demonstration lens 121 is arranged under the hole engagement child 45. Inserting this hole engagement child 45 in attaching hole 121a, holding retaining walls 14 or 15 further, and carrying out jogging operation of the demonstration lens maintenance means 5 and the lens maintenance means 6 in one all around The hole engagement child's 45 taper side is made to engage with the marginal part of attaching hole 121a of the demonstration lens 121 over a perimeter by carrying out rotation operation of the operation knob 33 for slope regulation, and carrying out rotation operation of the operation shaft 16. Attaching hole 121a of the demonstration lens 121 of 121b is the attaching hole prepared in the opposite side.

[0090] Rotation operation of this operation shaft 16 is transmitted to operation shaft 16' through the maintenance means linkage means 7, i.e., timing gears 34 and 35 and a timing belt 36, and the periphery section of the rim loess lens 130 held at the lens maintenance means 6 of operation

shaft 16' is made to interlock and tilt it to tilting operation of the periphery section of the demonstration lens 121. In this case, the inclination state of the periphery section of the rim loess lens 130 and the periphery section of the demonstration lens 121 will be in the same state.

[0091] While the tangential plane which passes along the point that the front face of this demonstration lens 121 and the center line of attaching hole 121a cross by this state while the center line of attaching hole 121a of the demonstration lens 121 and the hole engagement child's 45 axis are in agreement becomes an abbreviation horizontal, the hole engagement child's 45 axis is made to intersect perpendicularly to this tangential plane. And in this position, it is set up so that the distance from the right end of the rim loess lens 130 to the axis of a drill 58 may be in agreement with the distance from the right end of the demonstration lens 121 to the hole engagement child's 45 center. In addition, when making an attaching hole in the left end section of the rim loess lens 130, it is set as the same relation.

[0092] An attaching hole is drilled in the right end section of the rim loess lens 130 with a drill 58 by the same operation with the equipment of drawing 1 mentioned above in this state having performed (formation). The drilling position to the rim loess lens 130 of this attaching hole turns into a position corresponding to the position of an attaching hole established in the demonstration lens 121 of the same configuration as this rim loess lens 130. And the axis of this drill 58 becomes perpendicular to the tangential plane which passes along the point that the nose of cam of a drill 58 touches the outside surface of the rim loess lens 130. In addition, this tangential plane serves as an abbreviation horizontal.

[0093]

[Effect] 1st lens maintenance means by which invention of a claim 1 makes the demonstration lens with which the attaching hole for component mounting was prepared in the periphery section hold as explained above, The 2nd lens maintenance means which makes the demonstration lens held by the lens maintenance means of the above 1st correspond, and makes the rim loess lens after a grinding process hold, The hole processing means held on the aforementioned base in order to make the attaching hole for the periphery section component mounting of the rim loess lens held at the lens maintenance means of the above 2nd, In the attachment punching equipment for the component mounting of a rim loess lens equipped with an engagement means by which the punching member of the aforementioned hole processing means engages with the aforementioned attaching hole in the position which faced the predetermined position of the periphery section of the aforementioned rim loess lens It is considering as the composition which prepared the controller material for adjusting the position of the aforementioned rim loess lens and the aforementioned demonstration lens at least in one side of the above 1st and the 2nd lens maintenance means.

[0094] simple [without requiring skill / in the periphery section of the rim loess lens of a demonstration lens configuration] in the attaching hole for component mounting according to the composition of this claim 1, whether a processing error is in the size of a rim loess lens or is the case where the grinding process of the rim loess lens is carried out to the configuration and analog of a demonstration lens — and it can open correctly quickly It is avoidable that backlash arises between parts and a rim loess lens, and a rim loess lens becomes useless by this at the time of the component mounting using an attaching hole.

[0095] Moreover, since invention of a claim 2 considered as the composition prepared based on the criteria positioning member made to contact the Koba end face of the aforementioned rim loess lens and a demonstration lens Whether a processing error is in the size of a rim loess lens or is the case where the grinding process of the rim loess lens is carried out to the configuration and analog of a demonstration lens The distance of the Koba edge of a demonstration lens and the Koba edge of a rim loess lens is set up simply and correctly. It is avoidable that make the same distance from the Koba edge of a rim loess lens and a demonstration lens to an attaching hole, backlash arises between parts and a rim loess lens at the time of the component mounting using an attaching hole, and a rim loess lens becomes useless.

[0096] Invention of a claim 3 adjusts the inclination of the aforementioned demonstration lens by operation of the lens maintenance means of the above 1st. furthermore, sometimes Since it

considered as the composition which established a slope regulation means to adjust the rim loess lens which the lens maintenance means of the above 2nd was interlocked with the lens maintenance means of the above 1st, and was held at the lens maintenance means of the above 2nd to the same inclination as the aforementioned demonstration lens The periphery section can make easily the attaching hole for component mounting prepared in the periphery section of the rim loess lens by which the grinding process was carried out to the demonstration lens configuration right-angled to the tangential plane of a refracting interface, without requiring skill.

[Translation done.]

*** NOTICES ***

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the plan showing the fundamental composition of the attachment punching equipment for the component mounting of the rim loess lens concerning this invention.

[Drawing 2] Outline explanatory drawing in which (a) looked at some equipments of drawing 1 from the side, and (b) are important section explanatory drawings of the cam shown in (a).

[Drawing 3] While fracturing partially the equipment shown in drawing 1, it is explanatory drawing which looked at the part from the transverse plane.

[Drawing 4] It is the perspective diagram of the lens shown in drawing 1, and a demonstration lens attaching part.

[Drawing 5] It is explanatory drawing of a demonstration lens attaching part shown in drawing 4.

[Drawing 6] Operation explanatory drawing of the equipment which (a) requires for this invention, and (b) are ***** of the pad shown in (a).

[Drawing 7] It is the perspective diagram of the mark attachment equipment used for the attachment punching equipment for the component mounting of the rim loess lens concerning this invention.

[Drawing 8] It is the plan of the means for supporting which are some mark attachment equipments shown in drawing 7.

[Drawing 9] It is operation explanatory drawing of the mark attachment equipment shown in drawing 7.

[Drawing 10] It is operation explanatory drawing of the equipment which determines the sense of the rim loess lens which the means for supporting shown in drawing 7 are made to support.

[Drawing 11] It is a plan for important section explanation of the attachment punching equipment for the component mounting of the rim loess lens concerning this invention.

[Drawing 12] It is the perspective diagram of the lens maintenance means shown in drawing 11.

[Drawing 13] It is explanatory drawing of the demonstration lens maintenance means shown in drawing 11.

[Drawing 14] It is the cross section with which explanatory drawing of the positioning means which looked at (a) from [of drawing 11] arrow A-A, and (b) meet the partial right lateral view of (a), and (c) meets the B-B line of (a).

[Drawing 15] They are the cross section with which (a) meets important section explanatory drawing of drawing 11, and (b) meets the C-C line of (a), and a cross section in alignment with D-D line of (b).

[Drawing 16] It is operation explanatory drawing of the equipment shown in drawing 11 - drawing 15.

[Description of Notations]

4 — X-Y table (move means)

5 — Demonstration lens maintenance means (1st lens maintenance means)

6 — Lens maintenance means (2nd lens maintenance means)

8 — Hole position detection means

9 — Hole processing means

45 — Hole engagement child

58 — Drill
121 — Demonstration lens
121a — Attaching hole
130 — Rim loess lens
200 — 1st lens maintenance means
201 — 2nd lens maintenance means
205 — Slider (controller material)

[Translation done.]

*** NOTICES ***

Japan Patent Office is not responsible for any damages caused by the use of this translation.

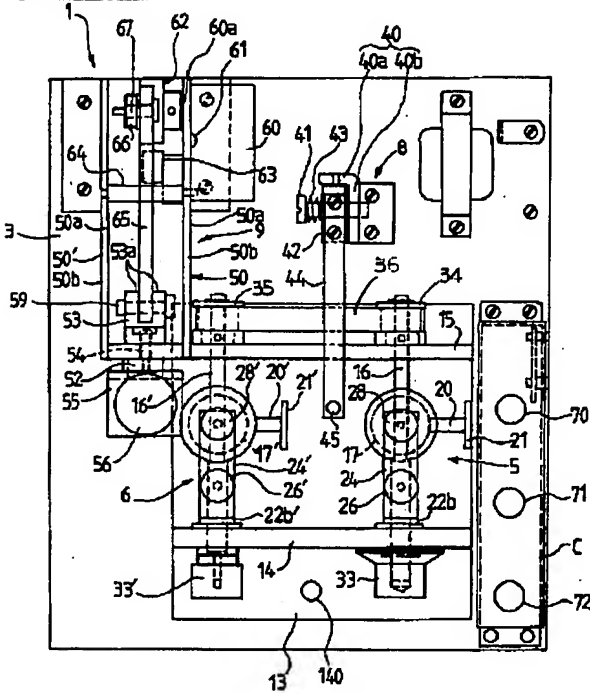
1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.*** shows the word which can not be translated.

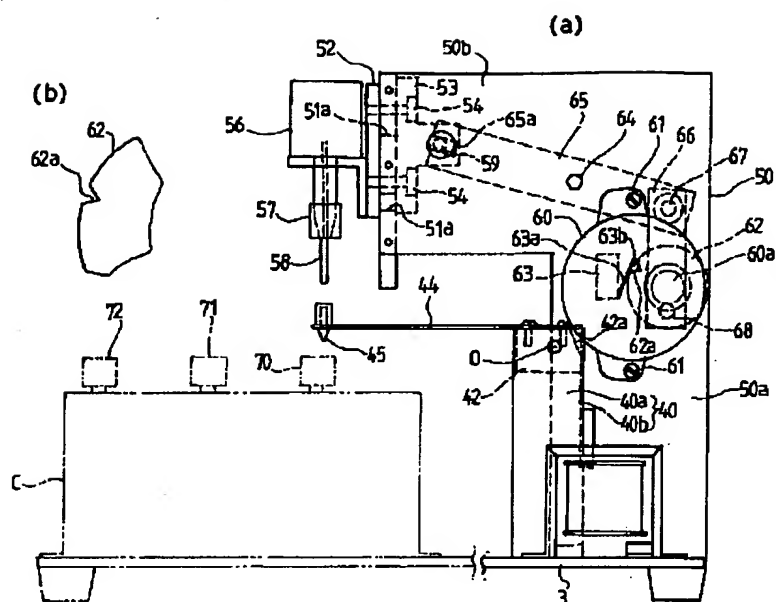
3.In the drawings, any words are not translated.

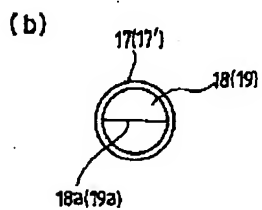
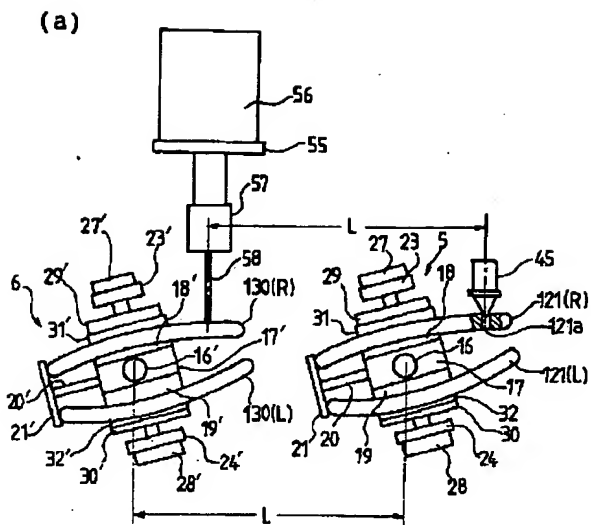
DRAWINGS

[Drawing 1]

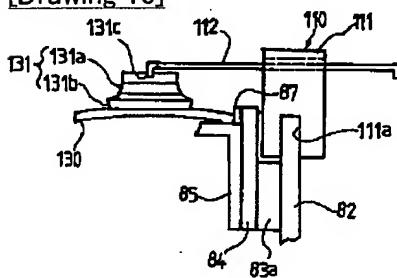


[Drawing 2]

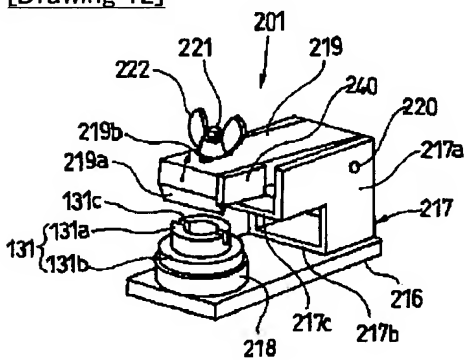




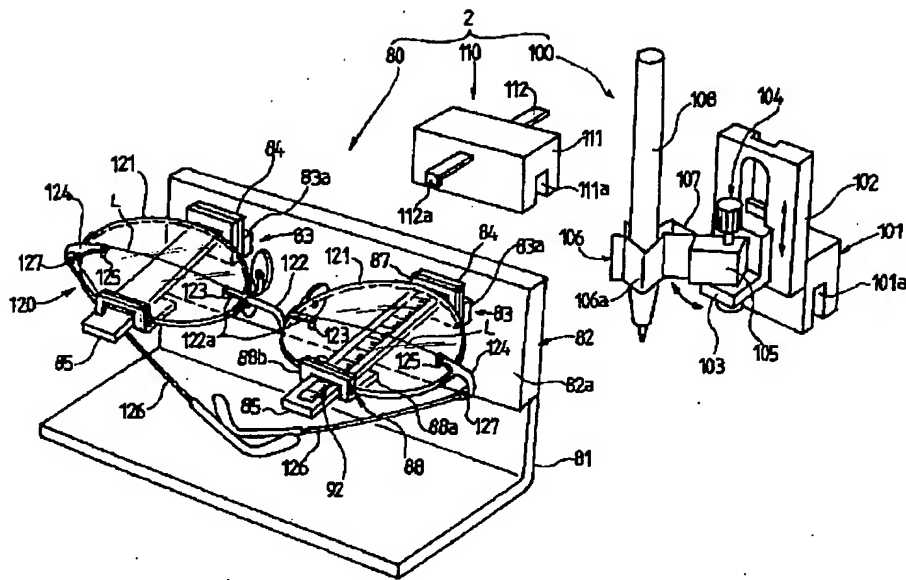
[Drawing 10]



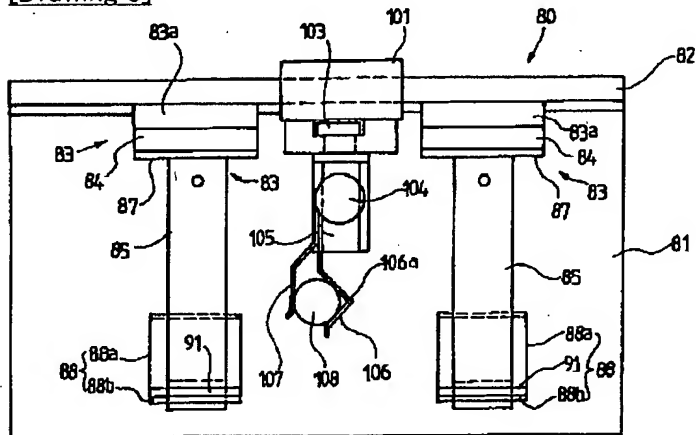
[Drawing 12]



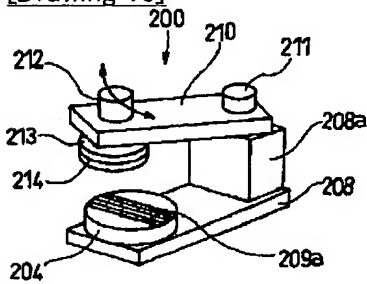
[Drawing 7]



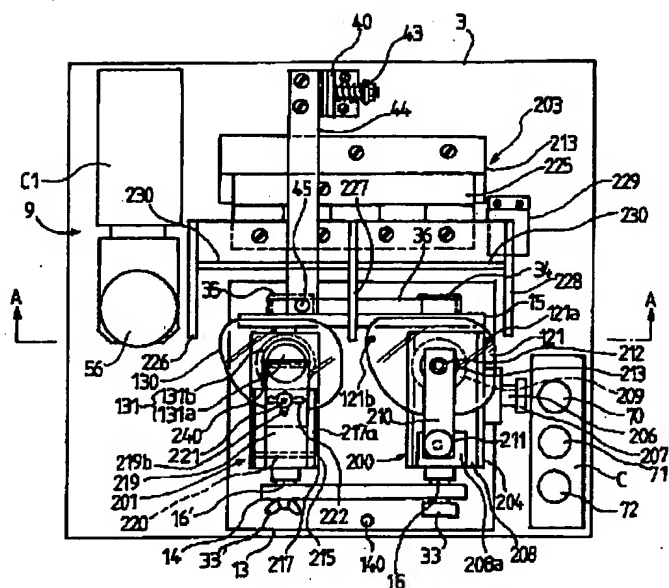
[Drawing 8]



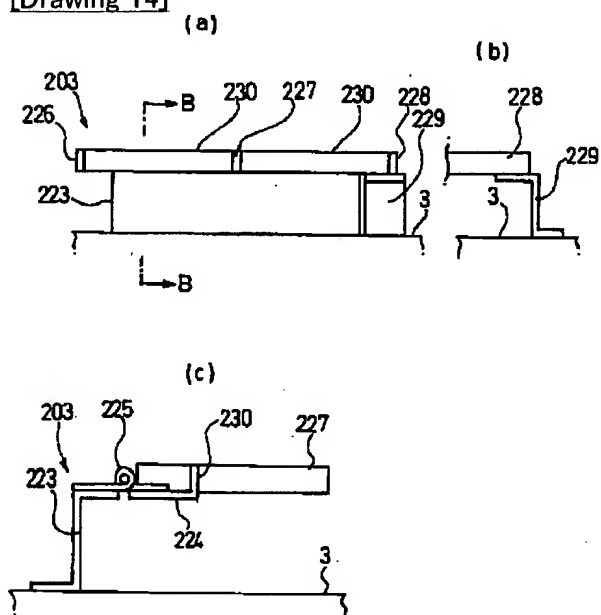
[Drawing 13]



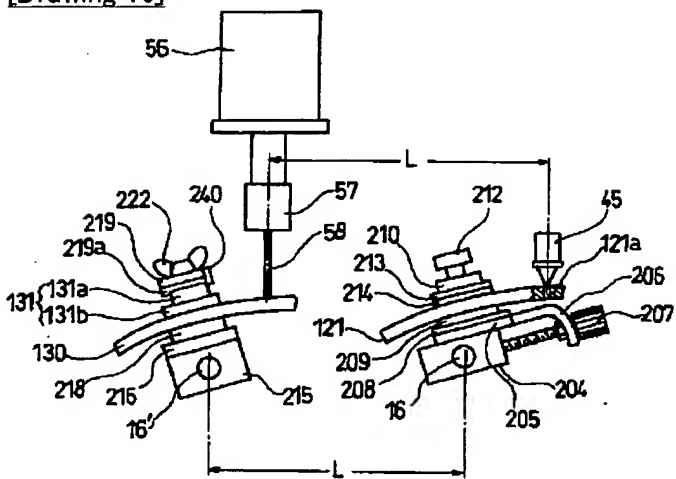
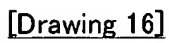
[Drawing 11]



[Drawing 14]



[Drawing 15]



[Translation done.]